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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

09/927,914

**Applicant(s)**

TULLY ET AL.

**Examiner**

Yong S. Chong

**Art Unit**

1627

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-10, 12, 13, 21, 22, 24-48, 59, 65-93, 100-104, 107 and 108 is/are pending in the application.
- 4a) Of the above claim(s) 12, 21, 22, 24-48, 59, 65-79 and 86-93 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-10, 13, 80-85, 100-104, 107 and 108 is/are rejected.
- 7) ☒ Claim(s) 4, 12, 21-22, 24-25, 59, 102-104 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-846)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Status of the Application***

In view of the Pre-Brief Conference Decision filed on 9/17/2010, PROSECUTION IS HEREBY REOPENED.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

This Office Action is in response to applicant's arguments filed on 1/28/10. Claim(s) 3, 11, 14-20, 23, 49-58, 60-64, 94-99, 105-106 have been cancelled. Claim(s) 107-108 have been added. Claim(s) 1-2, 4-10, 12-13, 21-22, 24-48, 59, 65-93, 100-104, 107-108 are pending. Claim(s) 1, 100-102, 104 have been amended.

Upon further consideration of the Restriction Requirement filed on 7/30/02 during the Pre-Brief Conference, it was determined that several claims have been inadvertently withdrawn and should have been examined. This Office Action serves to make corrections to this issue. Specifically claims 2, 9-10, 13, 80-85 read on the elected invention, therefore will now be examined.

Claim(s) 12, 21-22, 24-48, 59, 65-79, 86-93 have been withdrawn. Claim(s) 1-2, 4-10, 13, 80-85, 100-104, 107-108 are examined herein.

Applicant's amendments to the claims have rendered all 112 rejections of the last Office Action moot, therefore hereby withdrawn.

Upon further consideration of the claims filed on 7/30/07 during the Pre-Brief Conference, it was determined that several claims should have been objected to as well as rejected to under 112. This Office Action serves to make corrections to these issues.

As a result of the above issues, the 103(a) rejection of the last Office Action is withdrawn. The following new rejections will now apply.

### ***Claim Objections***

Claim 4 is objected to because of the following informalities: Claim 4 should recite "step (a)" instead of "step b)". Appropriate correction is required.

Claims 12, 21-22, 24-25, 59 are objected to because of the following informalities: Claims 12, 21-22, 24-25, 59 are dependent on cancelled claims. Appropriate correction is required.

Claims 102-104 are objected to because of the following informalities: Claims 102-104 are identical to claims 6-8. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support for phosphodiesterase 4 inhibitors inducing CREB-dependent gene expression.

Claims 8-10 are rejected under 35 U.S.C. 112, first paragraph, because the specification does not reasonably provide enablement for phosphodiesterase 4 inhibitors inducing CREB-dependent gene expression. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The instant specification fails to provide information that would allow the skilled artisan to fully practice the instant invention without undue experimentation. Attention is directed to *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApl 1986) at 547,

the court recited eight factors: (1) the nature of the invention; (2) the state of the prior art; (3) the breadth of the claims; (4) the amount of direction or guidance presented; (5) the predictability or unpredictability of the art; (6) the relative skill of those in the art; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

(1) The Nature of the Invention: The rejected claims are drawn to an invention which pertains to phosphodiesterase 4 inhibitors inducing CREB-dependent gene expression.

(2) State of the Prior Art: The state of the art regarding phosphodiesterase 4 inhibitors inducing CREB-dependent gene expression is non-existent.

(3) Breadth of Claims: The complex nature of the subject matter of this invention is greatly exacerbated by the breadth of the claims. The claims encompass every known phosphodiesterase 4 inhibitors for inducing CREB-dependent gene expression.

(4) Guidance of the Specification: There is no guidance of the specification regarding inducing CREB-dependent gene expression with phosphodiesterase 4 inhibitors.

(5) The Predictability or Unpredictability of the Art: The invention is directed to a very unpredictable field of CREB-dependent gene expression.

(6) The Relative Skill of those in the Art: One of ordinary skill in the art does not know induce CREB-dependent gene expression with phosphodiesterase 4 inhibitors.

(7) Working Examples: The specification is devoid of any examples of inducing CREB-dependent gene expression with phosphodiesterase 4 inhibitors.

(8) The Quantity of Experimentation Necessary: The specification fails to provide support for inducing CREB-dependent gene expression with phosphodiesterase 4

inhibitors. Nor does it provide information to practice the claimed invention, absent undue experimentation. Genetech, 108 F. 3d at 1366 states that "a patent is not a hunting license. It is not a reward for search, but compensation for its successful conclusion" and "patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable."

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 5 and 101 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131

USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, dependent claims 5 and 101 recites the limitation "wherein said phosphodiesterase 4 inhibitor is administered before and during each training session" which is a broader recitation than the limitation in claim 1 which recites "administering a phosphodiesterase 4 inhibitor to said animal during rehabilitation."

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham vs John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 4-10, 13, 80-85, 100-104, 107-108 are rejected under 35 U.S.C. 103(a) as being obvious over Christensen et al. (US Patent 5,547,979) in view of the Merck Manual (of record).



The instant claims are directed to a method of providing cognitive training and administering a phosphodiesterase 4 inhibitor to a human during rehabilitation of said animal from stroke, wherein the human has suffered impaired cognitive function and impaired sensory-motor function due to the stroke.

Christensen et al. teach the phosphodiesterase inhibitor, rolipram (col. 11, line 14), in a method of treating stroke in a human (claim 1). The active ingredient may be administered from 1 to 6 times a day (col. 8, lines 62-64) or as recognized by one of ordinary skill in the art that the optimal quantity and spacing of individual dosages will be determined by the nature and extent of the condition, the form, route, site of administration, patient, and that such optimums can be determined by conventional techniques (col. 10, lines 29-41).

It is noted that the limitations regarding "which enhances CREB pathway function" and "wherein rehabilitation of said cognitive deficit is effected by producing a long-lasting performance gain" as well as "induces CREB-dependent gene expression" and "up-regulates a positive effector of CREB pathway function" and "stimulation of neuronal activity or a pattern of neuronal activity" are given little patentable weight, because these biological processes are inherent when the same compound is administered in the same patient population at the same dosage.

"Products of identical chemical composition can not have mutual exclusive properties." Any properties exhibited by or benefits from are not given any patentable weight over the prior art provided the composition is inherent. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical

chemical structure, the disclosed properties are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01. The burden is shifted to the applicant to show that the prior art product does not inherently possess the same properties as the instantly claimed product.

Examiner also notes that one of ordinary skill in the art would recognize that stroke patients are usually characterized by impaired cognitive function as well as impaired sensory-motor function. Moreover, the giving multiple cognitive training sessions to a stroke patient is necessitated by a clinical diagnosis of one or both of impaired cognitive function and impaired sensory-motor function.

However, Christensen et al. fail to disclose multiple cognitive training sessions sufficient to produce an improvement in performance of a cognitive task whose deficit is associated with a central nervous system disorder to an animal during rehabilitation of said animal from stroke.

The Merck Manual teaches that a training protocol should be started as early as possible towards a patient's rehabilitation to stroke. Such rehabilitation includes encouragement, orientation toward the outside environment, eating, dressing, toilet functions, other basic needs, passive exercise, particularly of paralyzed limbs, and breathing exercises, if possible, should be started early (pg. 1455-1456). It is noted that these rehabilitation techniques meet the limitation of cognitive training. Furthermore, it is obvious to one of ordinary skill in the art to not stop at a single training session in the rehabilitation of a stroke victim since the process takes a great deal of time with many repeated sessions.

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art, at the time the claimed invention was made, to have combined the cognitive multiple training sessions, as described in the Merck Manual, before and during administration of the phosphodiesterase inhibitor, rolipram, in the method of treating stroke in a human, as disclosed by Christensen et al. during rehabilitation of said human from stroke.

A person of ordinary skill in the art would have been motivated to combine the cognitive multiple training sessions, as described in the Merck Manual, before and during administration of the phosphodiesterase inhibitor, rolipram, in the method of treating stroke in a human, as disclosed by Christensen et al. during rehabilitation of said human from stroke because: (1) both Christensen and the Merck Manual disclose treatment for the same purpose, which is treating stroke patients and because (2) of the additive therapeutic effects of employing two methods of treating stroke simultaneously. Therefore, one of ordinary skill in the art would have had a reasonable expectation of success in treating stroke in a human by administering a phosphodiesterase inhibitor, rolipram, in conjunction with a cognitive training protocol, outlined by the Merck Manual during rehabilitation of said human from stroke.

Examiner notes that it is also obvious to administer a PDE4 inhibitor in conjunction with cognitive training to a person undergoing rehabilitation and suffering from a cognitive deficit associated with stroke, whether the person has undergone neuronal stem cell manipulation or not. This is because one of ordinary skill in the art would expect the PDE4 inhibitor to be successful in treating the cognitive deficit

associated with stroke whether or not the person has undergone neuronal stem cell manipulation since it has no direct bearing on the cognitive deficit.

### ***Response to Arguments***

Applicant argues that no evidentiary basis for the assertion that Christensen covers PDE4 inhibitor administration during all stages of stroke treatment has been made. Christensen does not expressly or inherently disclose administering a PDE4 inhibitor during rehabilitation of a stroke patient. Specifically, Applicants go into great detail regarding the mechanism of action of PDE4 inhibitors, including inhibiting the inflammatory response often associated during the immediate time period following a brain injury. Therefore, Christensen effectively teaches away from the repeated application of PDE4 inhibitors in conjunction with stroke, due to the early production of TNF during the initial stages of an inflammatory event.

This is not persuasive because Christensen clearly does not limit the administration of PDE4 inhibitors to any particular time period or treatment window of a stroke patient. In fact, Christensen clearly recites the treatment of a stroke patient, which also includes the time after the acute phase of stroke episode or the rehabilitation period involving cognitive training. One of ordinary skill in the art would interpret the teachings of Christensen to administer the PDE4 inhibitor after the acute phase of stroke episode since a full clinical diagnosis must be made before any treatment regimen is to be implemented. The skilled artisan would also recognize that rehabilitation should be started as soon as a full diagnosis is made. Further, it is not

clear when exactly does inflammation subside during the treatment period of a stroke patient, since low levels of inflammation could last well into the rehabilitation period. Applicant is reminded that the standard for obviousness is not absolute but a reasonable expectation of success.

Applicant continues to argue that Christensen does not mention rehabilitation and only mentions stroke twice.

This is not persuasive because if Christensen were to mention rehabilitation, then the rejection would be anticipatory. Applicant is reminded that the current rejection is a 103(a) rejection based on obviousness, where the Merck Manual teachings rehabilitation of stroke patients. Further, the fact that stroke is only mentioned twice does not take anything away from the teachings of Christensen since the reference teaches the exact patient population as claimed.

Applicant also argues that the Merck Manual can only be read to teach cognitive training after the acute phase of a stroke. As a result, Applicant argues against the motivation in the obviousness rejection.

This is not persuasive because as stated above, Christensen clearly teaches, in general, the treatment of a stroke patient by administering a PDE4 inhibitor, which encompasses the entire treatment regimen including rehabilitation. Furthermore, the Merck Manual clearly state that a training protocol should be started as early as possible towards a patient's rehabilitation to stroke. Such rehabilitation includes encouragement, orientation toward the outside environment, eating, dressing, toilet functions, other basic needs, passive exercise, particularly of paralyzed limbs, and

breathing exercises, if possible, should be started early. This time period may encompass when the patient is still in or just recovering from the acute phase of the stroke episode and beyond. Nonetheless, it is clear that the Merck Manual teaches cognitive training after the acute phase of a stroke. It is Examiner's position that it would be obvious to administer PDE4 inhibitors as taught by Christensen in combination with rehabilitation after the acute phase of stroke. Therefore, since both references teach treating stroke patients, it is obvious to combine these treatment regimens because both are drawn to the same purpose as well as for the combined therapeutic effect. For these reasons, Examiner submits that there would be reasonable expectation of success in treating stroke patients as instantly claimed. Applicant's arguments directed to two different treatments, whose roles in stroke are mechanistically, temporally, and clinically distinct, are not persuasive. The reason being that although the mechanism of action may be different, the ultimate goal of treating stroke is the same. It is Examiner's position that both treatment regimens serve to work together in treating a stroke patient through rehabilitation.

Applicant argues hindsight reconstruction in the argument that performance gain would necessarily result if rolipram therapy is administered immediately following stroke and cognitive therapy is begun as early as possible after stroke. Applicant argues that the Examiner has provided no evidence that the administration timeline contemplated by Christensen overlaps with that described by the Merck Manual. Specifically, Applicant argues that neither of the cited references teach or suggest "long-lasting

performance gain effected by enhancement of CREB pathway function during rehabilitation.”

This is not persuasive because said performance gain of a cognitive task in a stroke patient is an inherent property when the same compound is administered to the same patient at the same dose. Therefore, the “long lasting” and “enhancement of CREB pathway function” limitations are met because they are inherent properties. Moreover, the Examiner interprets performance gain of a cognitive task as covering a wide range of impairments, which include aphasia (language/speech disturbance) and apraxia (impaired ability to carry out motor activities), as disclosed in Applicant’s own disclosure. Essentially, the scope of the instant claims covers administration of the phosphodiesterase inhibitors at any time to the patient. Therefore, Applicant’s assertion that Christensen is simply teaching the administration of rolipram during the acute phase of the stroke to reduce TNF still meets the limitations of the instant claims as it relates to the Merck Manual reference. Nonetheless, Applicant is invited to show factual data that performance gain would not result in the method taught by the cited prior art references.

In response to applicant’s argument that the examiner’s conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant’s disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong S. Chong whose telephone number is (571)-272-8513. The examiner can normally be reached on M-F, 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SREENI PADMANABHAN can be reached on (571)-272-0629. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Yong S. Chong/  
Primary Examiner, Art Unit 1627

YSC